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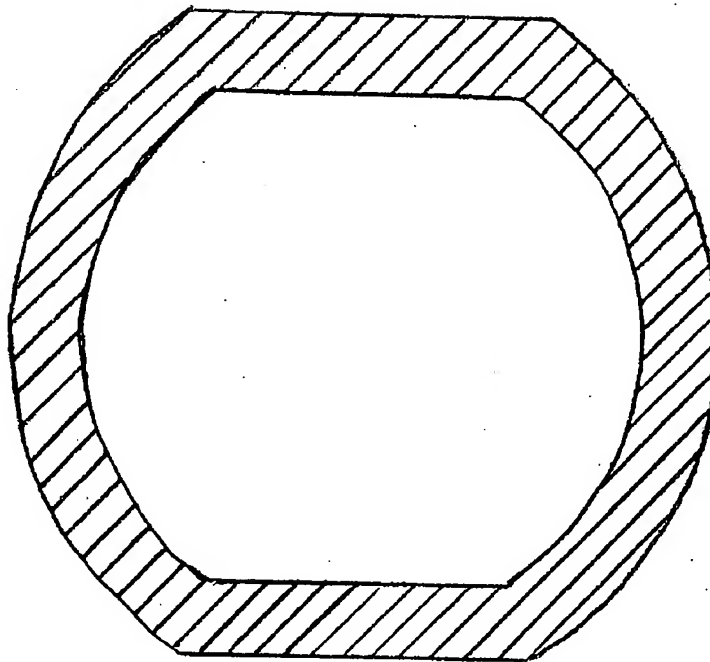
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(54) Title: CURLING BROOM HANDLE



(57) Abrégé/Abstract:

An elongated handle for a curling broom, the handle having a length, a substantially circular transverse cross section, and a pair of truncations of the substantially circular transverse cross section of the handle, the truncations being comprised of two diametrically opposed parallel planar surfaces and each of the pair of truncations having a length extending along at least a portion of the length of the handle.

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ABSTRACT

An elongated handle for a curling broom, the handle having a length, a substantially circular transverse cross section, and a pair of truncations of the substantially circular transverse cross section of the handle, the truncations being comprised of two diametrically opposed parallel planar surfaces and each of the pair of truncations having a length extending along at least a portion of the length of the handle.

## CURLING BROOM HANDLE

### TECHNICAL FIELD

5                   A handle for a curling broom.

### BACKGROUND OF THE INVENTION

10           The sport of curling involves the use of a curling broom for sweeping the ice in front of a moving curling stone and for assisting a curler in balancing while throwing a curling stone. Curling brooms consist of a handle portion and a head portion.

15           Curling broom heads include a brush surface for engaging an ice surface. Curling broom heads exist in many different styles and configurations and may be constructed of many different materials. For example, curling broom heads may be configured either as sweeping brooms or as push brooms and the brush surface may be constructed of fibers or pads and may be made from either natural or synthetic materials.

20           Curling broom handles are elongated shafts which are conventionally substantially circular in cross-section. One advantage of a circular cross-section is that it is an efficient shape which can provide equal strength and rigidity in all directions. This advantage is of some importance because a curling broom handle may be exposed to high stresses in a variety of directions. A second advantage of a circular cross-section is that because of its continuously rounded surface it is relatively comfortable to hold.

25           One disadvantage of a circular cross-section is that a circular shape may tend to rotate in a curler's hands. A second disadvantage of a circular cross-section is that a curler cannot sense with a circular handle by grip alone the orientation of the curling broom head relative to either the curler or the ice surface.

30           The advantages and disadvantages of a curling broom handle with its circular cross-section may be compared with the advantages and disadvantages of the shape of a hockey stick handle, which typically has a rectangular cross-section.

35           Advantageously, the rectangular cross-section of a hockey stick handle does not have the same tendency to rotate in a hockey player's hands as does the circular cross-section of

a curling broom handle, thus potentially making a hockey player's grip on the handle more positive. A second advantage is that the rectangular cross-section of a hockey stick handle does facilitate the sensing by grip alone of the orientation of the blade of the hockey stick relative to the hockey player and the ice surface.

5

Disadvantageously, the rectangular cross section of a hockey stick handle does not provide consistent strength and rigidity in all directions. Typically, the handle is oriented so that the top face and the bottom face of the cross-section are shorter than the front face and the rear face of the cross-section. As a result, a hockey stick handle is quite rigid and strong along the bending axis created when a player leans on the stick, but is less rigid and strong along the bending axis created when a player shoots a puck with the stick. As a result, although hockey stick handles provide good flexing action during the taking of a shot, they are also most often broken or damaged during shot-taking. A second disadvantage is that hockey stick handles are not particularly comfortable to hold, since the corners of the rectangular cross-section do not provide an ergonomic fit in the hand of the hockey player.

15

The art pertaining to hockey stick handles describes modified cross sections for hockey stick handles which are intended to overcome the disadvantages associated with a rectangular cross section.

20

Canadian Patent Application No. 2,106,178 (Scherz), U.S. Patent No. 4,361,325 (Jansen), U.S. Patent No. 5,306,003 (Pagotto), U.S. Patent No. 5,423,531 (Hoshizaki et al), U.S. Patent No. 5,577,725 (Pagotto) all describe modified rectangular cross sections for hockey stick handles.

25

PCT International Publication No. 01/14019 A1 (Sulenta) and U.S. Patent No. 5,967,913 (Sulenta) both describe a triangular cross section for a hockey stick handle.

U.S. Patent No. 3,712,659 (Kneissl) describes an oval shaped handle for an implement such as an ice axe, which handle has a coating of a synthetic material for improving the rigidity and durability of the handle.

30

None of these prior art references describe a cross section which would be suitable for use in a curling broom handle. In particular, none of these references describes a cross section which preserves the advantages while addressing the disadvantages of a circular cross section in a curling broom handle.

35

## SUMMARY OF THE INVENTION

5 The present invention is comprised of a modified transverse cross section for a curling broom handle.

10 In one aspect, the invention is an elongated handle for a curling broom, the handle having a length, and being of the type having a substantially circular transverse cross section, wherein the improvement comprises a pair of truncations of the substantially circular transverse cross section of the handle, the truncations being comprised of two diametrically opposed parallel planar surfaces and each of the pair of truncations having a length extending along at least a portion of the length of the handle.

15 The handle may be constructed of any material or combination of materials which are suitable for use in a curling broom handle. For example, the material may be comprised of wood, plastic, fiberglass, metal or composite materials. Preferably the material is comprised of wood, fiberglass or an aluminum alloy.

20 The handle may be comprised of a solid cross section or may be comprised of a hollow cross section. A hollow cross section may either be reinforced or unreinforced. The handle may also be comprised of a combination of solid and hollow cross sections along its length. The choice of cross sections for the handle is somewhat dependent upon the choice of material or materials for the handle.

25 A hollow reinforced cross section may be reinforced in any manner which provides added strength and rigidity to the handle. Preferably reinforcement of a hollow cross section is provided by one or more reinforcing members which are contained within the hollow cross section. These reinforcing members may or may not be partially or fully interconnected with each other.

30 In a first preferred embodiment the handle is comprised of a reinforced hollow cross section which is constructed of an aluminum alloy material. In this preferred embodiment the hollow cross section is reinforced by a plurality of interconnected reinforcing members which are contained within the hollow cross section. Any number and any configuration of interconnected reinforcing members may be used. Preferably, however, either three or four interconnected reinforcing members are contained within the hollow cross section.

The interconnected reinforcing members may be interconnected in any manner. Preferably the interconnected reinforcing members are interconnected in a manner so that they each span between an interior surface of the hollow cross section and a hub located within the hollow cross section. This combination provides a handle which is relatively light and which is also quite strong and rigid.

In a second preferred embodiment the handle is comprised of an unreinforced hollow cross section which is constructed of fiberglass.

In a third preferred embodiment the handle is comprised of a solid cross section which is constructed of wood.

The curling broom handle of the invention may be manufactured and sold separately from a curling broom head so that the handle is connectable with a variety of different curling broom heads and/or so that the handle can be used as a replacement handle for an existing curling broom. Alternatively, the curling broom handle of the invention may be manufactured and sold as a component of a curling broom, including both the handle and a curling broom head.

In either case, the handle may be comprised of a distal end for connection with a curling broom head, and the handle may be further comprised of a curling broom head which is attached to the distal end of the handle.

The curling broom head may be attached to the distal end of the handle in any manner which facilitates such attachment. Furthermore, the curling broom head may be attached to the handle so that the pair of truncations are facing any orientation which may be desired by the user.

In a first preferred embodiment, the curling broom head is attached to the distal end of the handle such that the pair of truncations define a front face of the handle and a rear face of the handle. In a second preferred embodiment, the curling broom head is attached to the distal end of the handle such that the pair of truncations define a top face of the handle and a bottom face of the handle.

The pair of truncations may extend along any portion of the length of the handle. Each of the pair of truncations may be the same length or may have different lengths. Preferably, each of the pair of truncations extends along substantially the entire length of the handle.

5           The shape and relative dimensions of the modified circular transverse cross section may take many forms within the scope of the invention. Preferably, the shape and relative dimensions of the transverse cross section preserve the advantages of a substantially circular cross section while providing the additional advantages resulting from the pair of truncations.

10           Preferably the amount of truncation of the transverse cross section is an amount which is sufficient to provide both an improved grip of the handle and improved sensory feel for the orientation of the handle, but which is not so great as to compromise the comfort and strength of the handle in a curler's hands.

15           To this end, the transverse cross section of the handle has a diameter and each of the pair of truncations has a width. Preferably the width of each of the truncations is less than or equal to about one half of the diameter of the transverse cross section of the handle. More preferably the diameter of the transverse cross section of the handle is less than about 30  
20 millimeters and the width of the truncations is less than about 15 millimeters. In the preferred embodiments the diameter of the transverse cross section of the handle is about 28 millimeters and the width of the truncations is about 14 millimeters.

#### BRIEF DESCRIPTION OF DRAWINGS

25           Embodiments of the invention will now be described with reference to the accompanying drawings, in which:

30           Figure 1 is a view of an unreinforced hollow transverse cross section for a curling broom handle in accordance with the invention.

            Figure 2 is a view of a solid transverse cross section for a curling broom handle in accordance with the invention.

35           Figure 3 is a view of a first embodiment of a reinforced hollow transverse cross section for a curling broom handle in accordance with the invention.

Figure 4 is a view of a second embodiment of a reinforced hollow transverse cross section for a curling broom handle in accordance with the invention.

5                   Figure 5 is a side view of a curling broom, including a curling broom head and a curling broom handle in accordance with the invention.

Figure 6 is a transverse cross section view of the curling broom handle depicted in Figure 5, taken along section line 6-6 of Figure 5.

10

Figure 7 is a transverse cross section view of an alternate configuration relative to the curling broom head for the curling broom handle depicted in Figure 5.

#### DETAILED DESCRIPTION

15

The present invention is directed at a modified transverse cross section for a curling broom handle. More particularly, the invention relates to modifications to the conventional substantially circular transverse cross section of a curling broom handle.

20

Referring to Figure 5, a typical curling broom (20) is comprised of a curling broom handle (22) and a curling broom head (24). The curling broom head (24) is attached to a distal end (26) of the curling broom handle (22). The curling broom head (24) may be either permanently or removably attached to the curling broom handle (22) and may be attached to the curling broom handle (22) using any structure or apparatus which will provide a suitable connection between the curling broom handle (22) and the curling broom head (24).

25

The curling broom head (24) is comprised of a brush surface (28) for engaging an ice surface (not shown) during a curling game. The brush surface (28) may be comprised of any suitable material. For example, the brush surface (28) may be constructed of fibers or pads and may be made from either natural or synthetic materials. In the preferred embodiment the brush surface (28) is comprised of a covered foam pad, both of which are formed from synthetic materials.

30

The curling broom handle (22) has a transverse cross section (30). A conventional curling broom handle (22) has a transverse cross section (30) which is circular in shape and which has no "flat" or "planar" sections.

35



Referring to Figures 1-7, the curling broom handle (22) of the invention has a transverse cross section (30) which is substantially circular in shape but which also comprises a pair of truncations (32) of the substantially circular transverse cross section (30). The truncations (32) are comprised of two diametrically opposed parallel planar surfaces.

The truncations (32) are preferably exactly diametrically opposed, are preferably exactly parallel to each other and are preferably exactly planar. However, deviations from these preferred characteristics are not intended to be excluded from the scope of the invention, as long as the truncations (32) are substantially diametrically opposed, are substantially parallel to each other and are substantially planar.

Each of the pair of truncations (32) has a length extending along at least a portion of the length of the curling broom handle. Each of the pair of truncations (32) may be the same length or the truncations (32) may have different lengths. In the preferred embodiments depicted in Figures 1-7 each of the truncations (32) has the same length and each of the truncations (32) extends along substantially the entire length of the curling broom handle (22).

The curling broom handle (22) may be comprised of a solid cross section, a hollow cross section, or a combination of solid and hollow cross sections. These cross sections may be formed using any suitable method of fabrication, including but not limited to molding, casting, injection molding, extrusion, pultrusion and layering. The cross sections may also in some cases be cut, carved or sculpted from larger pieces of material.

A hollow cross section may be unreinforced or reinforced. Typically, a reinforced hollow cross section facilitates a thinner wall thickness and may result in a more strength and rigidity in comparison with an unreinforced hollow cross section. A solid cross section may result in even more strength and rigidity than a reinforced hollow cross section, but depending upon the choice of materials may be substantially heavier than either an unreinforced or a reinforced hollow cross section.

As a result, the choice of solid cross section, unreinforced hollow cross section or reinforced hollow cross section depends upon a number of factors, including the selected material or materials for the curling broom handle (22), the desired strength and rigidity of the curling broom handle (22), the desired weight of the curling broom handle (22), and cost considerations.

In the case of a solid cross section as depicted in Figure 2, a preferred material is wood, which is relatively lightweight and inexpensive and yet has strength and rigidity properties which are adequate for use in a curling broom handle (32). Any other natural or synthetic material or combination of materials having suitable properties may also be used for a solid cross section.

In the case of a hollow cross section, the choice of an unreinforced or reinforced will be governed to some extent by the choice of material or materials.

For an unreinforced hollow cross section, fiberglass is a preferred material because it is relatively lightweight, provides adequate strength and rigidity and is relatively inexpensive. Fiberglass is, however, somewhat difficult to fabricate as a reinforced hollow cross section. As a result, fiberglass may be a preferred material for the unreinforced hollow transverse cross section depicted in Figure 1, but may not be a preferred material for reinforced hollow cross sections such as those depicted in Figure 3 and Figure 4. Many natural or synthetic materials or combinations of materials other than fiberglass may also be suitable for use in an unreinforced hollow cross section.

For a reinforced hollow cross section, plastics or metal alloys are preferred materials because they can typically be fabricated as reinforced hollow cross sections without great difficulty using such techniques as extrusion and pultrusion. Particularly suitable materials for use in reinforced hollow cross sections are aluminum alloys, which provide ease of extrusion and light weight as well as high strength and rigidity. As a result, aluminum alloys are preferred materials for the reinforced hollow cross sections depicted in Figure 3 and Figure 4. Many natural or synthetic materials or combinations of materials other than aluminum alloys may also be suitable for use in an reinforced hollow cross section.

A reinforced hollow cross section preferably includes one or more reinforcing members (34) contained within the hollow cross section. Reinforcing members (34) either may or may not be interconnected.

The preferred embodiments depicted in Figure 3 and Figure 4 include a plurality of interconnected reinforcing members (34). In these preferred embodiments the interconnected reinforcing members (34) span from an interior surface (36) of the hollow cross section to a hub (38) located within the hollow cross section. The reinforcing members (34) may be integrally

formed with the interior surface (36) and the hub (38) or they may be welded or glued or otherwise attached thereto.

5 The curling broom handle (22) of the invention may be constructed of a single material and a single cross section over its entire length, or it may be constructed of a plurality of materials and different cross sections extending along its length. Natural, synthetic and composite materials may all be suitable for use in constructing the curling broom handle (22)

10 The two principal objects of the invention are first, to provide a more positive grip on the handle (22) in comparison with a curling broom handle having a completely circular transverse cross section and second, to provide a sensory reference by grip alone for the position of the curling broom head (24) relative to the curler.

15 These two objects can be achieved regardless of the orientation of the truncations (32) relative to the curling broom head (24) when the handle (22) is attached to the curling broom head (24).

Figure 6 and Figure 7 depict two preferred orientations for the truncations (32). In Figure 6 the distal end (26) of the curling broom handle (22) is attached to the curling broom head (24) such that the truncations (32) define a front face (40) and a rear face (42). In Figure 7 the distal end (26) of the curling broom handle (22) is attached to the curling broom head (24) such that the truncations (32) define a top face (50) and a bottom face (46).

25 The two principal objects of the invention as described above are preferably balanced with a third object of preserving the advantages associated with a circular curling broom handle. With this third object in mind, and referring to Figures 1-4 and Figures 6-7, the transverse cross section (32) of the curling broom handle (22) has a diameter (48) and each of the truncations (32) has a width (50). Each of the truncations (32) may have the same width (50) or they may have different widths (50). The width (50) of the truncations (32) may also vary along the length of the curling broom handle (22).

The minimum width (50) of the truncations (32) is any width (50) which achieves the two principal objects of the invention.

35 Since the transverse cross section (32) is substantially circular and since the truncations are diametrically opposed, parallel and planar, it can be seen that the width (50) of

the truncations (32) is inversely related to the thickness of the handle (22) in a direction perpendicular to the plane of the truncations (32). In other words, the greater the width (50) of the truncations (32), the thinner the handle (22) in the perpendicular direction. The width (50) of the truncations (32) should not therefore exceed a width (50) which will materially compromise the strength and/or rigidity of the curling broom handle (22).

In addition, preferably the width (50) of the truncations (32) should not exceed a width (50) which results in the transverse cross section (30) of the handle (22) being other than substantially circular in shape.

10

In the preferred embodiments depicted in Figures 1-7 both of the truncations (32) have the same width (50) extending along substantially the entire length of the curling broom handle (22). In the preferred embodiments depicted in Figures 1-7 the width (50) of the truncations (32) is approximately one half of the diameter (48) of the transverse cross section (30) of the handle (22). It has been found that this width (50) achieves the two principal objects of the invention without significantly reducing the strength and/or rigidity of the handle (22).

15

As a result, preferably the width (50) of the truncations (50) is less than or equal to one half of the diameter (48) of the transverse cross section (32) of the handle (22). Preferably the diameter of the transverse cross section of the handle is less than about 30 millimeters and the width of the truncations is less than about 15 millimeters. In the preferred embodiments the diameter of the transverse cross section of the handle is about 28 millimeters and the width of the truncations is about 14 millimeters.

20

The curling broom handle (22) of the invention may be manufactured and sold together with a curling broom head (24) as part of a complete curling broom (20) or it may be sold and manufactured separately for combination with a curling broom head (24). As long as the distal end (26) of the curling broom handle (22) is compatible for attachment with a particular curling broom head (24), the handle (22) may be combined with that curling broom head (24) to form a new curling broom (20) or the handle (22) may be used as a replacement handle (22) for that curling broom head (24).

25

30

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An elongated handle for a curling broom, the handle having a length, and being of the type having a substantially circular transverse cross section, wherein the improvement comprises a pair of truncations of the substantially circular transverse cross section of the handle, the truncations being comprised of two diametrically opposed parallel planar surfaces and each of the pair of truncations having a length extending along at least a portion of the length of the handle.
2. The handle as claimed in claim 1 wherein the handle is comprised of a solid cross section.
3. The handle as claimed in claim 2 wherein the handle is constructed of a material and wherein the material is comprised of wood.
4. The handle as claimed in claim 1 wherein the handle is comprised of a hollow cross section.
5. The handle as claimed in claim 4 wherein the handle is constructed of a material and wherein the material is comprised of fiberglass.
6. The handle as claimed in claim 4 wherein the handle is constructed of a material and wherein the material is comprised of an aluminum alloy.
7. The handle as claimed in claim 6 wherein the hollow cross section is comprised of a reinforced hollow cross section.
8. The handle as claimed in claim 7, further comprising a plurality of reinforcing members contained within the hollow cross section for providing the reinforced hollow cross section.
9. The handle as claimed in claim 1, further comprising a curling broom head attached to a distal end of the handle.

10. The handle as claimed in claim 9 wherein the curling broom head is attached to the distal end of the handle such that the pair of truncations define a front face of the handle and a rear face of the handle.
- 5 11. The handle as claimed in claim 10 wherein each of the pair of truncations extends along substantially the entire length of the handle.
12. The handle as claimed in claim 9 wherein the curling broom head is attached to the distal end of the handle such that the pair of truncations define a top face of the handle and a  
10 bottom face of the handle.
13. The handle as claimed in claim 12 wherein each of the pair of truncations extends along substantially the entire length of the handle.
- 15 14. The handle as claimed in claim 1 wherein the transverse cross section of the handle has a diameter, wherein each of the pair of truncations has a width, and wherein the width of each of the truncations is less than or equal to about one half of the diameter of the transverse cross section of the handle.
- 20 15. The handle as claimed in claim 14 wherein the diameter of the transverse cross section of the handle is less than about 30 millimeters and wherein the width of the truncations is less than about 15 millimeters.
16. The handle as claimed in claim 15 wherein the diameter of the transverse cross  
25 section of the handle is about 28 millimeters and wherein the width of the truncations is about 14 millimeters.

FIGURE 1

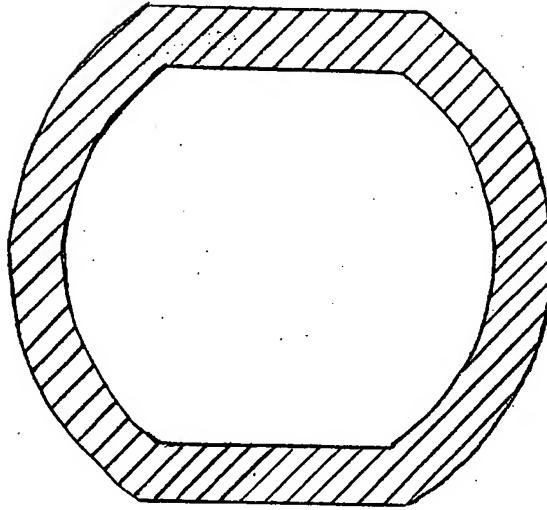


FIGURE 2

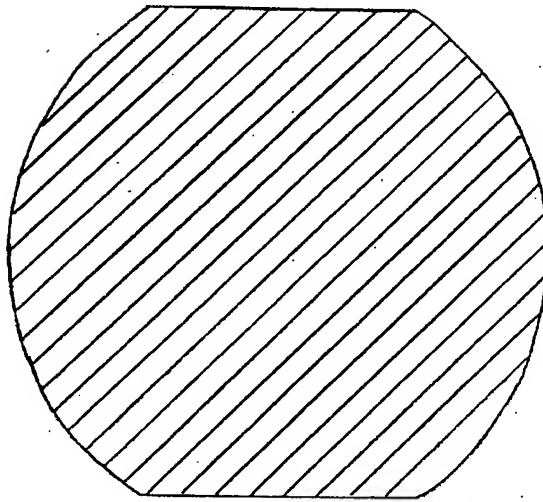


FIGURE 3

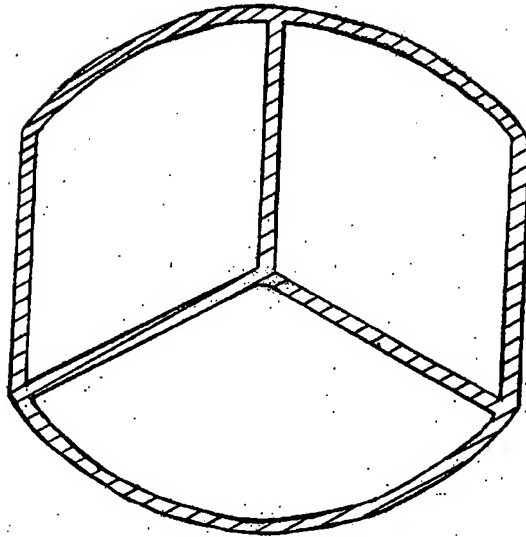


FIGURE 4

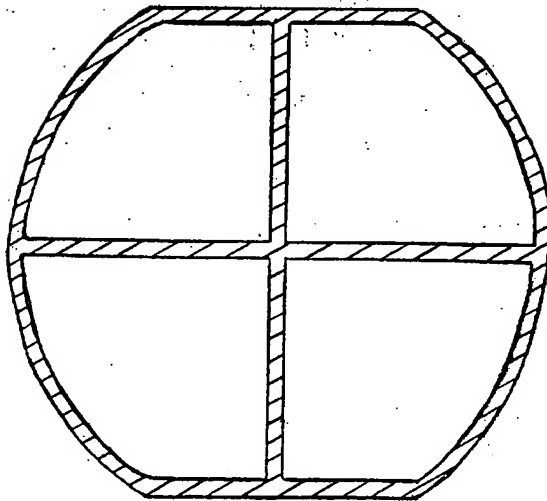




FIGURE 5

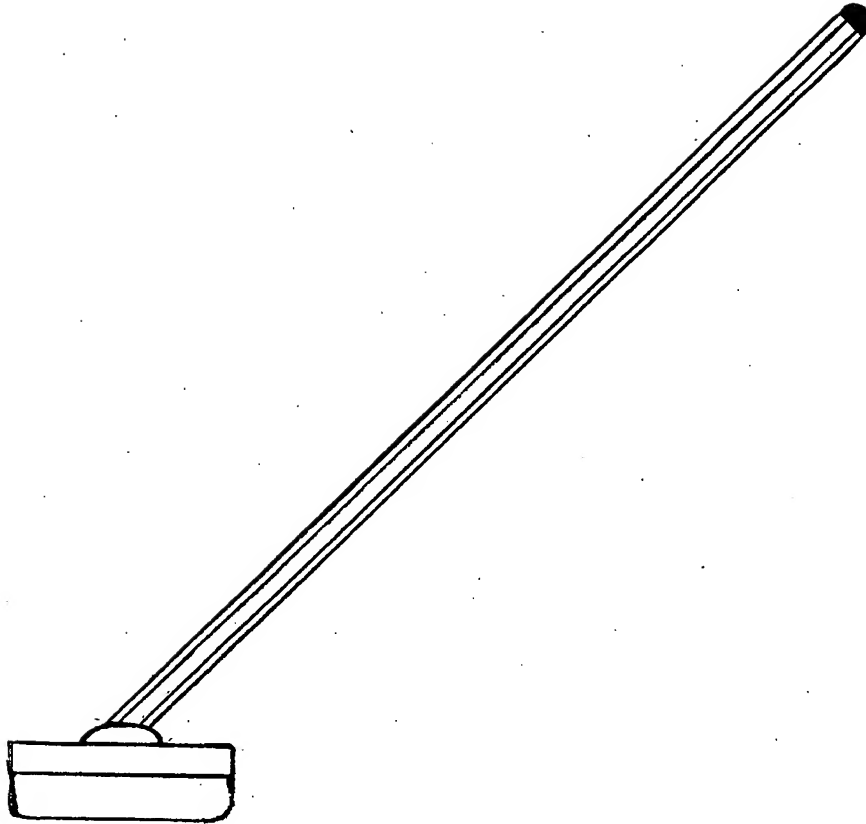


FIGURE 6

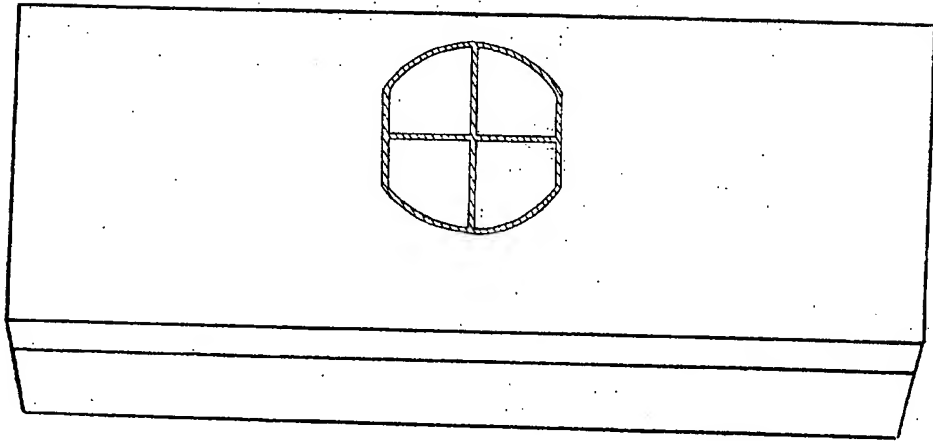
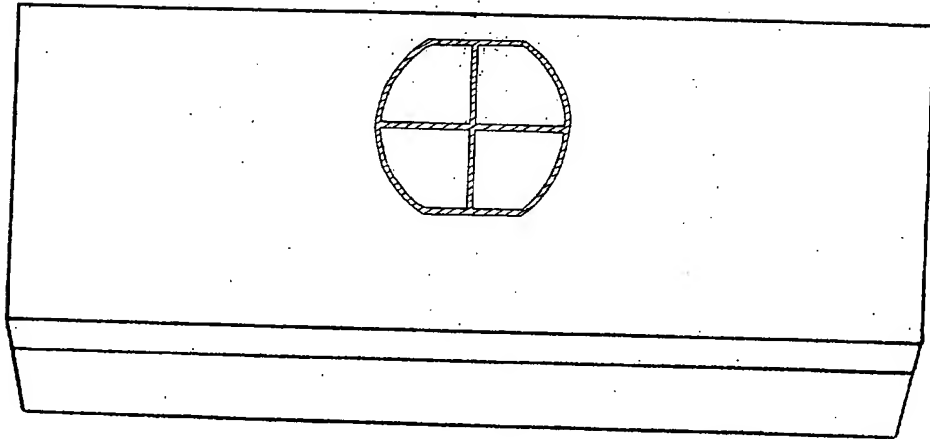
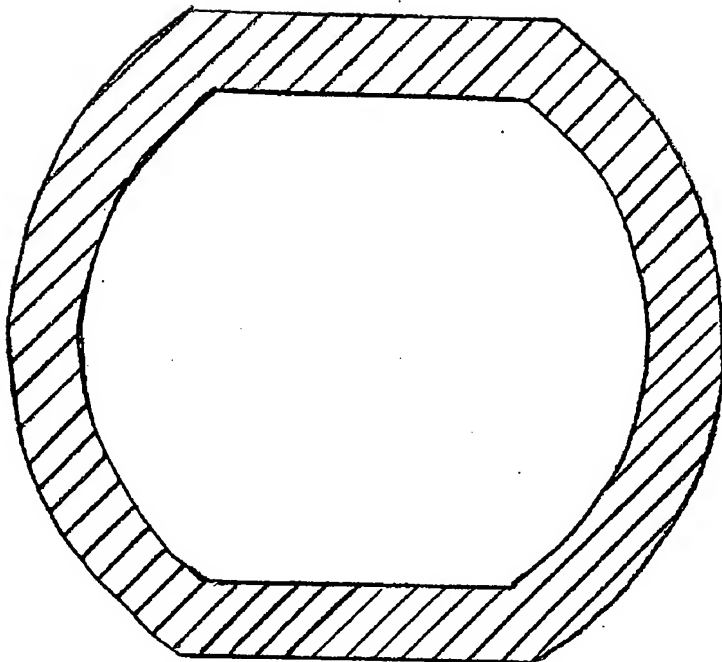


FIGURE 7





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TITLE: Curling broom handle, may be hollow or solid  
and made with a circular cross section with diametrical  
flat truncations to allow user to sense the broom  
head orientation by grip

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October 4, 2001		

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ABSTRACTED-PUB-NO: CA 2358307A

BASIC-ABSTRACT:

NOVELTY - The elongated handle for a curling broom has a circular  
transverse cross section, and a pair of truncations made on the transverse cross  
section of the handle. The truncations are made up of two diametrically

opposed  
parallel planar surfaces, and each pair of truncations has a length  
extending  
along at least a portion of the length of the handle.

DETAILED DESCRIPTION - The handle has a solid or hollow cross section  
and may  
be made of wood, glass fibre, or aluminum alloy. The hollow cross  
section may  
be reinforced on its inside. The curling broom head is attached to  
the distal  
end of the handle.

USE - In curling ice sports.

ADVANTAGE - Has the strength very nearly the same as a round cross  
section  
handle, but allows the user to sense the orientation of the curling  
broom head,  
solely by grip.

DESCRIPTION OF DRAWING(S) - The figure shows a cross section view of  
a hollow  
handle.

CHOSEN-DRAWING: Dwg.1/7

TITLE-TERMS: CURL BROOM HANDLE HOLLOW SOLID MADE CIRCULAR CROSS  
SECTION

DIAMETER FLAT ALLOW USER SENSE BROOM HEAD ORIENT GRIP

DERWENT-CLASS: P36

SECONDARY-ACC-NO:

Non-CPI Secondary Accession Numbers: N2003-297221